

Fire Protection for Nuclear Power Plants

Lead Office/Division: NRR/DRA/AFP

Supporting Offices/Divisions: RES/DFERR, NRR/ADRO, OE/EPPOB, NRO/DSRA, RII

Description

Risk-Informed, Performance-Based Fire Protection Implementation (NFPA 805)

The staff completed the rulemaking to endorse a voluntary alternative risk-informed, performance-based fire protection regulation for operating nuclear power plants. The staff worked with the National Fire Protection Association (NFPA) to develop a consensus standard, NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. In June 2004, NFPA 805 was endorsed in 10 CFR 50.48(c) and published in the *Federal Register* (69 FR 33536). This Risk-Informed (RI) rule is a voluntary alternative to the existing deterministic fire protection requirements of 10 CFR 50.48(b).

In conjunction with the NFPA 805 rule, the Nuclear Energy Institute (NEI) developed an implementation guide, NEI 04-02, "*Guidance for Implementation a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c).*" In May 2006, NRC issued Regulatory Guide (RG) 1.205, "*Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants*" endorsing revision 1 of NEI 04-02. To date, 42 operating nuclear power plant units that have sent the NRC a letter of intent to adopt NFPA 805 as their licensing basis.

The NRC has chosen two sites, Oconee and Shearon Harris to pilot their transition to the NFPA 805. Observation visits are held with the pilot plants to review their transition progress and address any implementation issues. Trip reports document the lessons learned from these visits. A Frequently Asked Question (FAQ) process has been developed to review and take a preliminary staff position on implementation issues. The staff holds public meetings monthly with the NEI NFPA 805 Task Force to work on these FAQs. The FAQ resolution is documented in a publically available memo, then incorporated in to the next NEI 04-02 revision, and should be endorsed by the NRC in a revised RG 1.205.

The Office of Nuclear Regulatory Research worked with the Electric Power Research Institute (EPRI) to develop two documents essential for the successful implementation of the NFPA 805 rule. First is NUREG/CR-6850, "*Fire PRA Methodology for Nuclear Power Facilities*," September 2005 and NUREG-1824, "*Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications*," May 2007. Credible Fire PRAs and Fire Models help ensure the application of risk is appropriate for the NRC's fire protection regulation. The staff plans to conduct reviews of the Pilot Plant's Fire PRAs to assure adequate quality and completeness. Subsequent plants will conduct peer reviews and the staff will review these evaluations for adequacy.

The staff is developing a Standard Review Plan (SRP) to review License Amendment Requests (LARs) for plants changing to the new licensing basis. The staff will use a draft plan to review the technical adequacy of the Pilot Plants request, then a final SRP will be issued for the non-pilot plant reviews.

Web-site: <http://www.nrc.gov/reactors/operating/ops-experience/fire-protection.html>

Project Considerations: Lack of Fire PRA expertise may slow the transition process.

Completed Milestones (date complete)

- Conduct Pilot Plant Observation Visit Number Six (May 2007)
- Issued NUREG-1824, *Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications* (May 2007)
- Conduct Pilot Plant Observation Visit Number Seven (July 2007)
- Conduct Pilot Plant Observation Visit Number Eight (August 2007)
- Issued Regulatory Information Summary, RIS 1007-19, on the NFPA 805 frequently asked question program (August 2007)

Future Milestones

Selected Major Milestones and Schedules				
Major Milestones	Original Target Date	Revised Date	Completion Date	NRC Responsibility
Conduct Pilot Plant Observation Visit Number Nine with Oconee, Shearon Harris, and Region II	November 2007			NRR/ADES DRA/AFP
Conduct Regional Inspector Fire Protection Workshop	November 2007			NRR/ADES/ DRA
Develop draft Risk-Informed SRP for Pilot Plant's LAR review	December 2007			NRR/ADES/ DRA/AFP
Conduct Staff Review of Pilot (Shearon Harris) Fire PRA.	February 2008			NRR/ADES/ DRA
Conduct Staff Review of Pilot (Oconee) Fire PRA.	March 2008			NRR/ADES/ DRA
Receive and review the pilot plant LARs utilizing the draft SRP, then prepare a Safety Evaluation Report (SER).	LAR: June 2008 SER: December 2008			NRR/ADES/ DRA/AFP